

Notice of Allowability

Application No.

09/643,982

Applicant(s)

ST. VILLE, JAMES A.

Examiner

Art Unit

Kandasamy Thangavelu

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to September 27, 2006.
2. ☒ The allowed claim(s) is/are 1-9, 12-22, 25-26, 29-45 and 56.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 9/29/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' communication dated September 27, 2006. Claims 1-9, 12-26, 29-45 and 56 of the application are pending.

Examiner's Amendment

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Michael Shea on November 16, 2006.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

3. The application has been amended as follows:
Cancel claims 23 and 24.

Reasons for Allowance

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4. Claims 1-9, 12-26, 29-45 and 56 of the application are allowed over prior art of record.

5. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a method of manufacturing an object having a potential $\{ x \}$ that is generated in response to a field $\{ f \}$ applied thereto; a computerized mathematical model of the object is generated by discretizing the geometric model of the object into a plurality of finite elements; the values of the field and potential are specified at the nodes of the finite elements; a material property matrix $[k]$ is calculated using the relationship $\{ f \} = [k] \{ x \}$; material property coefficients are extracted from the material property matrix for each finite element in the computerized model; the extracted material property coefficients are compared to material property coefficients for known materials; manufacturing parameters corresponding to the matched material property coefficients are determined; the object is manufactured in accordance with the determined manufacturing parameters (St. Ville., U. S. Patent 5,594,651);

(2) a process for producing a hollow article made of a laminated composite material consisting of reinforcing fibres embedded in a polymerized organic resin matrix, the article having high strength, accuracy and temperature resistance characteristics; laminated composite materials comprising reinforcing fibres embedded in a matrix of polymerized resin are useful in aeronautical industry because of their excellent strength-to-weight ratio; the external surfaces of the article formed by contact with mould walls are accurate; the internal surfaces of the article are in contact with the cores; the core expansion produced by thermal expansion of the silicone

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elastomer of which the core is made stretches the reinforcing fibres; the cores are used to accurately position the cavities in the article (**Castanie et al.**, U. S. Patent 6,290,889); and

(3) a type of whiskers and a fiber reinforced composite material using the same; potassium hexatitanate whiskers having a tunnel structure and containing aluminum and niobium, both of which are impurities, in such amounts that the $\text{Al}_2\text{O}_3/\text{Nb}_2\text{O}_5$ molar ratio is at least 0.6; a composite material comprising such whiskers as a reinforce material and a thermoplastic resin or a light alloy as a matrix; the composite material is capable of increasing its strength by a heat treatment; the composite material has improved mechanical strength compared with conventional composite material (**Harada et al.**, U. S. Patent 5,563,199).

None of these references taken either alone or in combination with the prior art of record discloses a method for manufacturing an object having a potential { x } that is generated in response to a field { f } applied thereto, specifically including:

(Claim 1) " determining manufacturing equipment control parameters for each volume increment of the object based on the matched material property coefficients;

wherein the composite material comprises structural fibers laminated in a resin matrix into which an impurity is introduced, the amount of impurity introduced into the resin matrix being controllably variable for the respective volume increments of the object".

None of these references taken either alone or in combination with the prior art of record discloses a computer-implemented method for determining machine control instructions for

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manufacturing an object having a potential { x } that is generated in response to a field {f} applied thereto, specifically including:

(Claim 25) " generating machine control instructions for controlling the manufacturing equipment in accordance with the manufacturing equipment control parameters to manufacture the object; and

wherein the composite material comprises structural fibers laminated in a resin matrix into which an impurity is introduced, the amount of impurity introduced into the resin matrix being controllably variable for the respective volume increments of the object".

None of these references taken either alone or in combination with the prior art of record discloses a method for manufacturing an object for which a defined field { f } generates a potential {x} in response thereto, specifically including:

(Claim 41) " comparing each of the plurality of values in the material property matrix [k] to known material properties and, responsive to a match, selecting a corresponding manufacturing process parameter for a volume increment of the object, wherein the selected manufacturing process parameter is usable for controlling composite manufacturing equipment if the matched known material property is a material property for a composite material; and

wherein the composite material comprises structural fibers laminated in a resin matrix into which an impurity is introduced, the amount of impurity introduced into the resin matrix being controllably variable for the respective volume increments of the object ".

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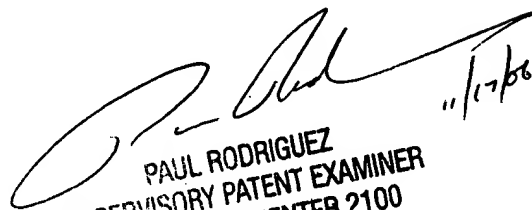
6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

K. Thangavelu
Art Unit 2123
November 16, 2006


PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100
11/17/06